

Abstract

An additional motion is introduced into a scanning operation. This additional motion is in addition to the motion that is inherent in any document scanning operation. For example, in a flatbed scanner a linear array of scanning devices is positioned across the document in a first or "x" direction and this array is moved across the document in a perpendicular or "y" direction. In a flatbed scanner the position of the scanning devices are fixed in the "x" direction. In a drum scanner a light beam moves across the document in an "x" direction and the document is moved in the "y" direction. The light reflected from the document is directed to a fixed photoreceptor. With the present invention an additional vibratory motion is introduced into the scanning process. With a flatbed scanner the array of detector devices is moved or vibrated. The vibratory motion can for example be in the "x" direction. With a drum scanner the photoreceptor is moved or vibrated. For example the photodetector can be moved or vibrated in the "x" direction. The amount and direction of the vibratory movement can vary up to about one half the distance between units in the scanner's resolution (i.e. one half a pixel). If one is trying to eliminate Moiré patterns the vibratory movement can be a pseudo random series of movements. If one is trying to introduce a special pattern into the document or to otherwise create special effects, various other type of motion can be used. Movement of the CCD array in a flatbed scanner or movement of the photoreceptor in a drum scanner can be done by a simple piezo electric transducer or by a simple mechanical cam.